

Arcsecond Pointing Stability on a CubeSat Platform, Phase I

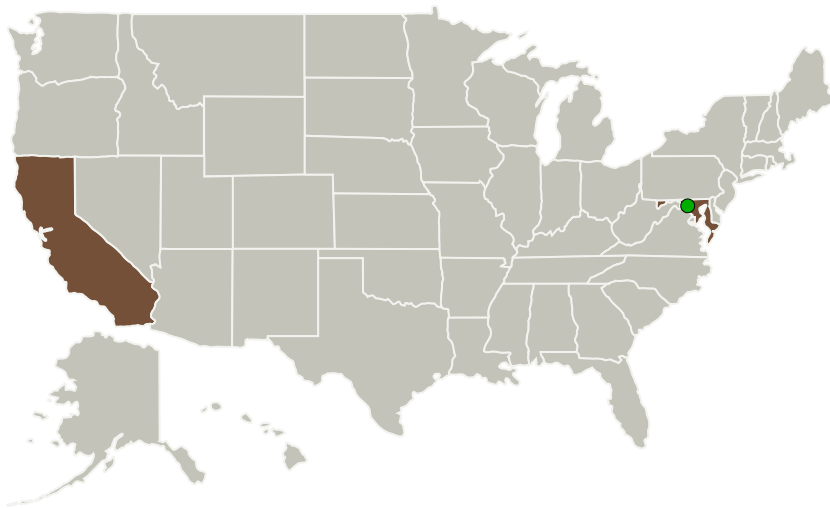
Completed Technology Project (2016 - 2016)



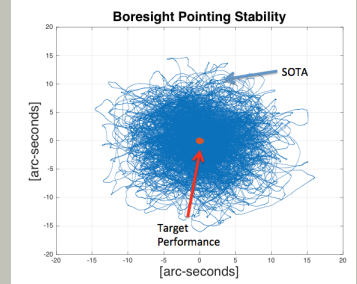
Project Introduction

In this proposal, Tyvak Nano-Satellite Systems LLC (Tyvak) will improve the state-of-the-art in low-jitter CubeSat platforms to one arc-second pointing stability. This platform will address the increasing attitude control performance requirements of CubeSats to enable commercial and scientific missions previously restricted to larger and more expensive satellite platforms. Reducing jitter in attitude determination and control systems (ADCS) CubeSat platforms has typically been an after-thought. Miniaturizing large satellite ADCS to CubeSat size has resulted in relatively poor attitude stability due to inexpensive reaction wheels and high noise IMU's. In the past five years, the CubeSat industry has seen a huge increase in customers with miniaturized payloads seeking high capability platforms. Arcsecond attitude stability is an enabling technology for many optical missions, including optical communication, space based optical inspection, and exoplanet imaging.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Tyvak Nano-Satellite Systems Inc.	Lead Organization	Industry	Irvine, California
 Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland



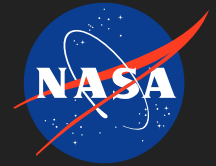
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Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

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Completed Technology Project (2016 - 2016)



Primary U.S. Work Locations

California

Maryland

Project Transitions



June 2016: Project Start

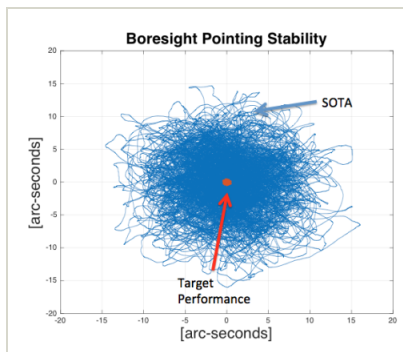


December 2016: Closed out

Closeout Documentation:

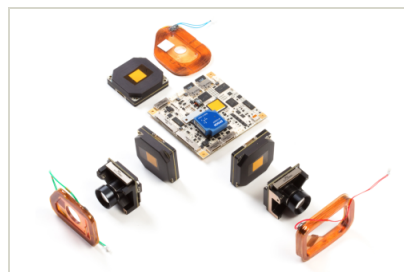
- Final Summary Chart(<https://techport.nasa.gov/file/139721>)

Images



Briefing Chart Image

Arcsecond Pointing Stability on a CubeSat Platform, Phase I
(<https://techport.nasa.gov/image/130417>)



Final Summary Chart Image

Arcsecond Pointing Stability on a CubeSat Platform, Phase I Project Image
(<https://techport.nasa.gov/image/132479>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Tyvak Nano-Satellite Systems Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

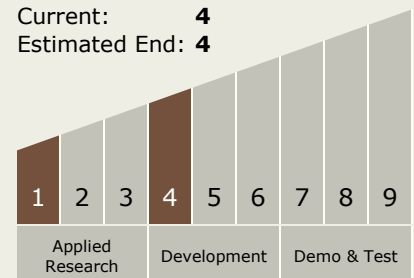
Solomon Westerman

Technology Maturity (TRL)

Start: **1**

Current: **4**

Estimated End: **4**



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Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
 - └ TX17.2 Navigation Technologies
 - └ TX17.2.3 Navigation Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System